NOTES AND ABSTRACTS

Professor Édouard Brückner, 1862-1927 [1]

We regret to learn of the death of Prof. Édouard Brückner, on May 21 at the age of 64 years. Professor Brückner is well known to all meteorologists from the weather cycle of about 35 years which bears his name, and which is probably the best-founded of all meteorological periodicities. It is stated that he discovered this cycle in 1887; apparently it was known several centuries before, for it is mentioned by Sir Francis Bacon, but until Brückner published in 1890 his noteworthy compilation "Klimaschwankungen seit 1700" it had never been scientifically demonstrated. Among his other meteorological publications may be mentioned his "Berichten über den Fortschritt der geographischen Meteorologie" (1891, 1894, 1899); Einfluss der Schneedecke auf das Klima der Alpen" (1893) and Klimaschwankungen 1813–1912 in Vorderindien (1918).

E. Brückner was born at Jena on July 29, 1862, his father being Alexander Brückner the historian, which perhaps accounts for his able treatment of historical sources in "Klimaschwankungen." He received the degree of Ph. D. at Munich in 1885, and from 1886 to 1888 he was assistant editor of the Meteorologische Zeitschrift. His work was not mainly meteorological, however, for in 1891 he became professor of geography at Bern, and in 1906 professor of geography at Vienna, which post he held until his death, and he did a great deal to explore the boundary science of geology and meteorology which is known as paleoclimatology. He collaborated with A. Penck in studying the Quaternary history of the Alps, a fortunate association which produced "Die Alpen in Eiszeitalter," three large volumes published between 1901 and 1909 providing at once the first sure proof of the succession of glacial advances and retreats, a nomenclature which is firmly rooted in the literature of glacialogy, and a model of painstaking exploration, critical comparison and lucid exposition.

CAUSES OF TROPICAL RAINFALL

[Reprinted from *Nature*, London, July 9, 1927, p. 62]

The rainfall of the Sudan, both west and east, has been found to fluctuate considerably from year to year, not infrequently to such an extent that deficiency or irregularity leads to famine.

In discussing the causes for this in a paper in *Matériaux pour l'étude des calamités* (No. 11, 1926), G. T. Renner maintained that all tropical rainfall is really monsoonal in character. During the period of high sun, the land masses are centers of low pressure surrounded on sea and land by areas of higher pressure. Monsoonal currents blowing from the sea into these areas of low pressure bring heavy rainfall. The alternate cooling of the tropical lands, when the sun is low, leads to a high pressure and a dry season. The double rainy season of equatorial regions is caused by those areas being crossed by both sets of monsoonal currents. Thus variations in the rainfall of the Sudan are due to variations in the intensity of the low pressure and the resultant strength of the monsoon currents. Variation in solar weather must cause the variation in the intensity of the low pressure.

Mr. Renner further points out that while all tropical rainfall is liable to vary from year to year, it is only in the savanna and grassland regions, where normal rainfall makes agriculture possible, that a marked deficiency leads to famine conditions. He thus considers that all the tropical savannas and grasslands are potential famine areas.

THE WEATHER AT BRUSSELS (UCCLE) DURING THE MONTHS OF APRIL AND MAY, 1927 [2]

By E. VANDERLINGEN

April.—During almost all of the first half of April, Europe lay under the influence of low pressure, which appeared at the close of March and later extended over the greater part of the continent; barometric minima were noted in our region on the 2d and 10th. The anticyclone that afterward overspread the southern half of the continent until about the 22d began to invade Europe after the 12th and the region of low pressure was pushed back toward the north. Following the retreat of the anticyclonic belt toward the south the region of low pressure began to spread in the same direction after the 22d, the center remaining generally over Scandinavia or the Baltic Sea, or then in that vicinity. This barometric situation gave us as the predominating condition light to moderate winds from points between southwest and northwest; these were often cool and rarely warm, as the component was northerly or southerly.

Excepting the period from the 18th to the 22d, which was fine and warm (means of maxima and minima 18.5° C. and 6.3° C., normals 14.2° C. and 4.3° C., respectively), the temperature generally presented only slight departures, positive and negative, from the normal; colder weather prevailed after the 24th. For the month the mean maximum was 14.0° C. and the mean minimum 4.7° C. (normals 13.7° C. and 3.9° C., respectively). The highest temperature, 19.7° C., occurred on the 19th and again on the 21st, the lowest temperature, −0.5° C., was recorded on the 27th, the only day in the month with freezing temperature. White frosts were frequent; on the night of the 26th–27th the grass thermometer at Uccle registered −8° C.

The total duration of sunshine was 130 hours (normal 165 hours). The total precipitation was 67 mm. (normal 58 mm.) distributed over 18 days with appreciable amount; in the first half of the month the precipitation was 49 mm. on 13 rainy days.

May.—An area of barometric depression, not very deep, extending from the British Isles to the Mediterranean Sea, remained over western Europe during almost all of the first decade of May. This period was warm with light, variable winds. The high pressure that overlay Russia at the same time began to recede toward the east after the 8th, and a depression from the north spread over the north of that country, while an anticyclone, also from the north, advanced over western Europe. From the 11th to the 13th the barometric maximum remained in the vicinity of Iceland or of the British Isles. From the 15th to the 19th a barometric minimum moved from Iceland over Russia while an anticyclonic area, oriented northwest-southeast partially covered western Europe. This high pressure remained until about the 26th and later moved northward. In the last two decades the winds were from northwest to northeast; they were generally cold and dry. This condition was changed only toward the close of the month, when a rather uniform area of barometric depression advanced over the western

[1] Reprinted from Meteorological Magazine, June, 1927, p. 118.

[2] *Ciel et Terre*. June, 1927. Brussels.

part of the continent and there came with it warm, moist winds and stormy weather.

The weather was warm from the 1st to the 9th and again on the 30th and 31st (means of maxima and minima 22.5° C. and 9.1° C., normals 17.6° C. and 7.0° C.), while the remainder of the month was cold, chiefly at night due to intense radiation (means of maxima and minima 16.9° C. and 4.8° C., normals 19.2° C. and 8.2° C.). For the entire month the means of maxima and minima were 18.9° C. and 6.3° C. (normals 18.7° C. and 7.8° C., respectively). The highest temperature, 25.7° C., was recorded on the 4th and again on the 7th, the lowest temperature was −1.5° C. on the 12th. This freeze and the frequent white frosts were extremely damaging. In general, there was little cloudiness; the total number of hours of sunshine was 222 (normal 220). The first and second decades were especially sunny.

The precipitation was light; the 10 days with measurable amount gave only 34 mm. (normal 57 mm.), 24 mm. falling on the 30th and 31st. Toward the close of the month the dryness had become distressing to agriculture.—*Transl. W. W. R.*

SOLAR RADIATION AND RAINFALL IN THE SOUTHERN REGION OF CHILE

By JULIO BUSTOS NAVARRETE, Director

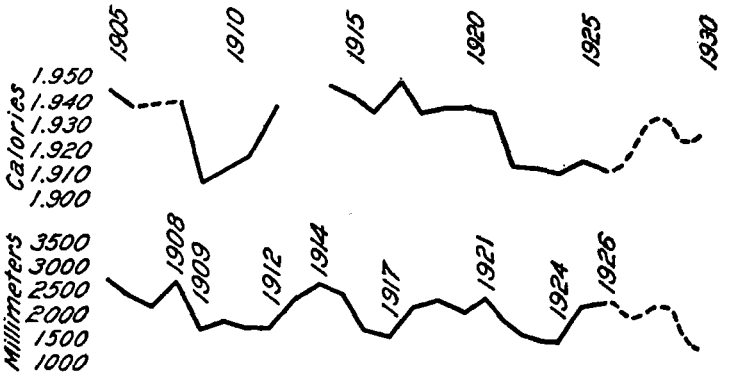
[El Salto Observatory, Sanitago, Chile, May, 1927]

* * * In our investigations we have constructed two graphs; one showing solar activity and rainfall from 1850 to 1926 and another showing solar radiation and rainfall from 1905 to 1926. The second graph, notwithstanding the fact that it relates to a shorter period, is the more interesting in that it contains exact data on solar radiation, measured in calories, and complete observations, without break in continuity, of rainfall at Valdivia.

From the year 1900 to date there has been observed a periodicity of 7 to 10 years in the rainfall of the southern region of Chile. The most important minima occurred in 1903, 1909–1912, 1917, and 1924. The maxima, however, have a march somewhat less regular, yet they, too, presnt a visible periodicity, the most important of the maxima being observed in 1908, 1914, 1921, and 1926 or 1927. The period appears to be a little shorter on resolving some maxima into two secondary maxima as is observed in the "double" period of the central region of Chile.

In our graph of solar radiation and rainfall in the southern region of Chile from 1905 to 1926 there can be clearly observed a manifest relation between the annual variation (variation from year to year) of solar radiation and that of rainfall at Valdivia. The minimum (of solar radiation) in 1909 coincides with a rather marked minimum of rainfall in the same year and this (condition) continues in the years (immediately) following; the maximum of 1914 coincides with a maximum of rainfall in the same year. The secondary (minimum) fall in 1916 produced, however, an exaggerated effect, the two years 1916 and 1917 being relatively dry; the increased radiation from 1917 to 1921 marks another (a new) rainy period that is well defined; the minimum of 1923 and 1924 coincides with a well marked minimum of rainfall; and, finally, the increase in solar radiation recently observed coincides, also, with the increase in rainfall in the southern region.

At present the southern region is in a period of rainy years, brought on, fundamentally, by this last increase in solar activity. In the accompanying graph we have prolonged the curves of solar radiation and rainfall, according to their probable course, up to the year 1930. As is seen, the rainfall will diminish a little in 1927 or 1928, increase again in 1928 or 1929, and then diminish in 1930, in which year there will begin, perhaps, a period of relative dryness.



These conclusions, however, are altogether provisional since it will be necessary to determine the mean of solar radiation in 1927 in order to estimate the increase that has recently begun and to (appraise) its consequences relative to the rainfall in the southern region of Chile. (However, it may be said that) the results obtained thus far are of sufficient value to afford us each year an indication (index) of the probabilities of the next winter—*Transl. W. W. Reed.*

METEOROLOGICAL SUMMARY FOR BRAZIL, MAY, 1927

By J. DE SAMPAIO FERRAZ, Director

[Directoria de Meterologia, Rio de Janeiro]

The secondary circulation in this month over the meridional and central parts of South America was particularly abnormal owing to a marked activity of depressions which reduced the usual frequency of HIGHS.

The first anticyclone of the month was already full fledged and in march to the northeast when low pressures set in, dividing the high in two sections. This area of low pressure developed a fairly deep secondary along the coast, producing high winds especially in the River Plate and Southern Brazil.

The second HIGH, which was really a return of the western section of the previous anticyclone, brought the first frosts of the season between the 12th and 14th. About this period a high-latitude depression passed by causing fresh winds in the River Plate and southern Brazil. A new HIGH dominated the continent up to the 19th. From this date till the 26th, low pressures set in again with high winds in southern Brazil and in Argentina. On the 27th was registered the advancement of the last anticyclone of the month with accentuated decline of temperature.

In a general way, rainfall was decidedly below normal throughout the country. In the south precipitation followed low pressures and contact between these and high pressures, but much less than was expected.

Rio de Janeiro had a normal month except rainfall which was below the usual value. On the 13th a stiff southwest wind was felt at night.

Crops generally doing well and better than could be expected with the marked deficiency of rainfall everywhere.